NOTES FOR SIBAYA PRECINCT INVASIVE PLANT CONTROL SITE VISIT, INSPECTION

28th August 2018

Prepared by: Geoff Nichols Horticultural Services

Present: 28th August 2018 Hlengiwe Luthuli (HL), Michael Hickman (MH) and Geoff Nichols (GN).

1. Invasive Introduced Plant Clearing

The area that has been cleared this past week from 23rd to 28th August 2018 is shown on the Map attached at Appendix A.

The HLEM staff are working along the western boundaries of the Umdloti private properties and back up slope to the previously cleared areas; and moving southwards, probably about 80 metres in length.

2. Fauna Issues

GN, as part of his ongoing professional learnership programme, attended a workshop organised by Prof. Colleen Downs at the University of KwaZulu-Natal in Pietermaritzburg to discuss the subject of seed dispersal by ungulates on the 20th July 2018.

Following on from the workshop, Geoff Nichols had an opportunity to meet and discuss at length with Dr. Christophe Baltzinger1, this topic. Dr. Baltzinger has specialised in forest ungulates, with his work in French Guyana and Europe having set the parameters for determining the density of animals in any given forest. Dr. Baltzinger was in South Africa for 2

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1 Dr Baltzinger is a forest ecologist with the National Research Institute of Science and Technology for Environment and Agriculture, Department Territories, Antony, France.
months working with local scientists on how plant seeds are dispersed by ungulates. Dr. Baltzinger offered to help and guide us on this subject of managing forests surrounded by human pressures².

On the 28th and 29th August, prior to Dr. Baltzinger’s return to France, he joined GN in the Hawaan Forest to look at and suggest ways of undoing the damage to the vegetation caused by the forest antelope. The damage is a direct result of the animals being forced into smaller areas by human development in our region, and the subsequent lack of management of animal numbers, in a confined space.

Over browsing is very evident on site and Dr. Baltzinger agrees that a programme of control should be initiated in the Hawaan and Sibaya Precinct forests. This control programme would result in the reduction of ungulates, with the objective of regenerating forest and improving overall Ecosystem Functioning.

The Roe Deer in Europe are about the same size as a Bushbuck in Africa and discussions as to the carrying capacity were held to determine what these should be in our coastal forests. A long-term project with the following link has been running (http://rgis.cefe.cnrs.fr/) on Black-tailed Deer which are over abundant and the impact that their herbivory is having on ecosystem functioning.

*Isoglossa woodii* (Buckwheat) has been utilised as our indicator plant species due to its dominance as an understorey plant species. GN showed Dr. Baltzinger forests on the Lower KZN South Coast at Pennington, Port Edward and Oribi Gorge where browsing is present and, in some areas, not present. This species will be a good indicator as through exclusion plots we will be able to demonstrate how this species reacts gradually in response to browsing pressure (growth height, percentage cover, ability to produce flower and fruits).

When a comparison between these individual plants and individuals of the same species was undertaken in the Durban area, a number of differences were very apparent. In the Hawaan and Mhlanga Forests the *I. woodii* are browsed down to about 100 mm above ground. In Burman Bush however, where Bushbuck are not present this species stands at about 2-2.5 m high. Dr. Baltzinger was also able to see the plants in full flower, which was opportune, as these species only flower every seven (7) or so years.

² Based on observations and Dr. Baltzinger’s experience in Europe and Tropical South America he gave a rough estimate of optimum carrying capacity for our Bushbuck of around 1 animal unit to about 10 hectares of land. The current thinking (based on articles and journal information) is one (1) animal unit per 2 hectares of land.

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² This URL has a good synopsis of his and others in the field of forest ecology
Dr. Baltzinger’s and GN’s thoughts are that the SCFR should aim at about one (1) animal unit to 15 hectares of land. This would allow the forest understory to recover. In addition, forest trees and shrubs that are not being able to recruit, since their seedlings are being browsed out by the over-abundance of animal units, will be provided with an opportunity to establish and attain a size beyond which the Bushbuck will not impact on them significantly.

* Between the Sibaya Coastal Forest Reserve (SCFR) and the HCT it is proposed that there is a need to remove a proportion of the browsers, specifically Bushbuck and possibly Red Duiker from the SCFR. In order to support this hypothesis, areas of intense browsing / over-utilisation were visited and compared to areas of lower intensity browsing. This has been undertaken at both Hawaan Forest and SCFR.

* Prior to any animals being removed, a baseline game count\(^3\) will be undertaken in the two (2) forests to determine approximately how many Bushbuck, Blue and Red Duiker are living in these forests.

This would be done by a team of people walking transects through the forest and noting what animals they see and, if possible, the gender. There is potential for the Hawaan and Umdloti residents to be involved in this game count exercise.

* Dependent on the findings, a programme of removal of the animals using game capture techniques would be instituted to transfer these antelope to other forests and areas suitable for Bushbuck and Red Duiker.

* Once the technical (ecological) team arrives at a consensual decision for the carrying capacity of these forests, a decision on the number of antelope to be translocated will be taken.

At the Zimbali Coastal Forest Resort a similar programme has been in place for the past 10 years; and around 650 Bushbuck have been removed and transferred to other suitable sites. Please note that these relocations will be undertaken with all the necessary permits and authority that are required for undertaking such an exercise. In addition, the proposed team that will undertake the translocations are well recognised and experienced in undertaking said activities.

3. Research Opportunities and Education

Following on from the discussions that were held between GN and Dr. Baltzinger, and considering the vision of the Trust, an opportunity for research to be undertaken has presented itself.

\(^3\) Sven Bruss has been approached and has provided a quotation to undertake said game count. The quote from Shemungwe Game Capture to do a game count at the SCFR is R3 000.00 excluding VAT.
* Dr. Baltzinger has recommended that a number of exclusion plots be situated in the forest. These plots will be 1m$^2$ in size.
* Dr. Kinvig recommends that at least 50 plots should be created to ensure that the sample size is accurate and not biased.
* In discussions between GN and Dr. Kinvig it has been decided to enlist the assistance of Professor Downs to potentially provide a suitable post-graduate student to undertake the assessment of the vegetation and its recovery once herbivory has been excluded.
* The work will be supervised by Dr. Kinvig, GN and Professor Downs.

Plate 1: Buckwheat – *Isoglossa woodii* at Ridgeside. Full height is 2.5 m and browse line is 1.2 m (red line) with high evidenced by the smaller leaves on the lower portion of the plant.
Plate 2: *Isoglossa woodii* browsed at Hawaan 100 mm tall, but still flowering.

Plate 3: An *Isoglossa* drift. The plants are about 2 years old; it is evident that there are no Bushbuck present.
Plate 4: *Isoglossa* plants which are approximately four (4) years old. No evidence of Bushbuck and their associated grazing.

Plate 5: *Isoglossa* plants which are approximately six (6) years old. No evidence of Bushbuck and their associated grazing.
Sibaya Conservation Forest Reserve

Zone 1: Sensitive*
Zone 2: Sensitive with Opportunity*
Zone 3: Active*
Zone 4: Active with Limitations*

02-10 July 2018 - IIP Clearing (4.71 ha)
08-14 August 2018 - Invasive Alien Clearing (0.64 ha)
12-19 June 2018 - Invasive Alien Clearing (0.53 ha)
18-26 June 2018 - Invasive Alien Clearing (0.57 ha)
26 June-02 July 2018 - Invasive Alien Clearing (0.17 ha)
10-17 July 2018 - IIP Clearing (0.42 ha)
17-25 July 2018 - IIP Clearing (0.28 ha)
25-31 July 2018 - Invasive Alien Clearing (0.11 ha)
31 July-07 August 2018 - Invasive Alien Clearing (0.5 ha)
08-14 August 2018 - Invasive Alien Clearing (0.64 ha)
14-15 August 2018 - Invasive Alien Clearing (0.26 ha)
16-22 August 2018 - Invasive Alien Clearing (0.62 ha)
23-28 August 2018 - Invasive Alien Clearing (0.35 ha)
28 August-04 September - Invasive Alien Clearing (1.32 ha)
21-28 May - Invasive Alien Clearing (2.12 ha)
29 May-1 June 2018 - Invasive Alien Clearing (1.28 ha)
4-8 June 2018 - Invasive Alien Clearing (0.58 ha)
8 June 2018 - Follow Up on Woody Species (0.19 ha)
12-18 June 2018 - Invasive Alien Clearing (1.36 ha)
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Please note that this is a Basic Map for Viewing Purposes.